CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.06/PC/CSR-07/082h/CEMENT/2016-17 Date: 04.07.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
*NAME OF THE WORK	:	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
*REFERENCE	:	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	02.07.2016
PERIOD OF TESTING	:	02.07.2016 to 04.07.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	29.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	150 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	475 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

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T-2377

Job No.: CTCE/BBMP/W.No.06/PC/CSR-07/082h/SAND-Gradation/2016-17 : 04.07.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
* Name of Work	: Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Technical Reference	: IS : 2386 Part 1 - 1963 RA-2007
Sample ID	: Fine Aggregates
Sample Received on	: 02.07.2016
Date of Testing	: 04.07.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	96.40	90-100	90-100	90-100	95-100
2.36	78.40	60-95	75-100	85-100	95-100
1.18	59.40	30-70	55-90	75-100	90-100
600 Micron	31.40	15-34	35-59	60-79	80-100
300 Micron	17.40	5-20	8-30	12-40	15-50
150 Micron	6.40	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.06/PC/CSR-07/082h/AGG/GR/2016-17 : 04.07.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
* Name of Work	: Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm)
Sample Received on	: 02.07.2016
Date of Testing	: 04.07.2016

Total Wt. of Aggregates in gms= **7000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	98.14	95-100	85-100
20	37.43	30-70	0-20
10	19.57	10-35	0-5
4.75	2.43	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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Job No.: CTCE/BBMP/W.No.06/PC/CSR-07/082h/AGG/GR/2016-17 : 04.07.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
* Name of Work	: Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
* Reference	: EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (20mm)
Sample Received on	: 02.07.2016
Date of Testing	: 04.07.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2007)	
		Graded	Single Sized
40	100	100	100
20	96.70	95-100	85-100
10	30.70	25-55	0-20
4.75	5.70	0-10	0-5

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

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Job No.: CTCE/BBMP/W.No.06/PC/STEEL/2016-17 11.07.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	:	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Date of Test	:	11.07.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	515	558	13.35	O.K	O.K

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Job No.: CTCE/BBMP/W.No.06/PC/STEEL/2016-17 11.07.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	:	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Date of Test	:	11.07.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	16	1.58	520	563	13.50	O.K	O.K

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T-2377

Job No.: CTCE/BBMP/W.No.06/PC/CSR-07/082h/CUBE/2016-17 15.08.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
* Name of the work	: Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
* Reference	: EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
* Sample ID	: Culvert Deck Slab Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 15.08.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.07.2016	15.08.2016	8.180	475.5	21.13
2	18.07.2016	15.08.2016	8.270	490.3	21.79
3	18.07.2016	15.08.2016	8.315	510.2	22.68

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-II/2016-17 Date: 03.08.2016

REPORT

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	:	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Type of Mix	:	Water Bound Macadam (Grade-II Metal)
Date of Sampling	:	01.08.2016
Date of Testing	:	03.08.2016

1) SEIVE ANALYSIS :

IS Sieve designation Size, mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
90mm	100.00	100.00
63mm	95.15	90-100
53mm	27.30	25-75
45mm	12.30	0-15
22.4mm	1.75	0-5

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-II/AIV/2016-17 03.08.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	03.08.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	20.58	20.79	
	100* (W_2/W_1)%			20.68

Comments:

Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-II/S-T/2016-17 03.08.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of Work	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Water Bound Macadam (Grade-II Metal)
Date of Testing	03.08.2016

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Result : Flakiness Index = **11.90%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index 25.15%

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-III/2016-17 Date: 05.08.2016

REPORT

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency		**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	:	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Type of Mix	:	Water Bound Macadam (Grade-III Metal)
Date of Sampling	:	03.08.2016
Date of Testing	:	05.08.2016

1) SEIVE ANALYSIS:

IS Sieve designation Size,mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
63mm	100.00	100.00
53mm	97.55	95-100
45mm	68.65	65-90
22.4mm	6.10	0-10
11.2mm	3.15	0-5

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-III/AIV/2016-17 05.08.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of the Work	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	05.08.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	80	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	20.90	21.11	
	100* (W_2/W_1)%			21.00

Comments:

→ Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

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Job No.: CTCE/BBMP/W.No.06/PC/WBM-III/S-T/2016-17 05.08.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. P. Chennakrishna,** No.152, 3rd Block, 3rd Stage, Sanegoravanahalli, Basaveshwaranagara, Bangalore – 79.
Name of Work	Improvements to Roads & Drains at Afzal Layout in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/325/2015-16 Dated: 24.03.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Water Bound Macadam (Grade-III Metal)
Date of Testing	05.08.2016

Result : Flakiness Index = **12.35%**

Elongation Index = **13.80%**

Result : Combined Flakiness & Elongation index 26.15%

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